Industrial IoT Networking Applications & Implementations Training Course



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4100 € (Per Person)

Ref: #NO3687_264280

Course Introduction / Overview:

This comprehensive training course is designed to provide IT and operations professionals with the essential skills for managing network applications in the Industrial Internet of Things (IIoT). In sectors like manufacturing, energy, and logistics, the convergence of operational technology (OT) and information technology (IT) creates new challenges and opportunities for efficiency, safety, and productivity. This course goes beyond basic IoT concepts to focus specifically on the networking layer of industrial systems. Participants will learn how to design, implement, and secure a network that connects a wide range of devices, from sensors on a factory floor to automated robotic systems. We will cover key topics like wireless connectivity, low-power protocols, and the crucial aspects of cybersecurity in an industrial context. Drawing from the academic research of renowned authors like Professor Janise C. Yip and her work on networked sensors, this program at BIG BEN Training Center provides a robust, evidence-based approach to IIoT networking. By the end of this course, you will be equipped to manage the network infrastructure of an industrial IoT deployment, ensuring reliable data flow, system security, and operational excellence.

Target Audience / This training course is suitable for:

- Industrial automation engineers.
- IT and network professionals.
- Operations managers.
- Systems integrators.
- Cybersecurity specialists.
- Technical professionals in manufacturing.
- IoT solutions architects.

Target Sectors and Industries:

- Manufacturing and smart factories.
- Energy and utilities.
- Transportation and logistics.
- Oil and gas.
- Mining.
- Government agencies and equivalents.
- Agriculture.

Target Organizations Departments:

- Operations Technology (OT).
- Information Technology (IT).
- Research and Development.
- Engineering.
- Safety and Risk Management.
- Production.
- Supply Chain.

Course Offerings:

By the end of this course, the participants will have able to:

- Explain the core components and architecture of an IIoT network.
- Select and implement appropriate wired and wireless connectivity solutions.
- Secure an IIoT network against common cyber threats.
- Manage a high volume of sensor data and device communications.
- Troubleshoot connectivity and performance issues in industrial environments.
- Understand the interplay between IT and OT networks.
- Design a scalable and reliable network for a smart factory.

Course Methodology:

This training course at BIG BEN Training Center uses a highly practical and scenario-based methodology. The program combines instructor-led sessions with hands-on labs that simulate real-world industrial environments. Participants will work through case studies that highlight the unique challenges of IIoT networking, such as ensuring network uptime for mission-critical systems and securing legacy equipment. The course will include interactive exercises where you will configure and manage network devices used in industrial settings. The instructor will provide expert guidance and feedback, helping participants to develop a strategic mindset for designing and maintaining a resilient industrial network. This approach ensures that the knowledge and skills gained are directly applicable to the industrial sector, preparing professionals to drive innovation and efficiency through well-managed network infrastructures.

Course Agenda (Course Units):

Unit One: Introduction to Industrial IoT

- What is the Industrial Internet of Things (IIoT)?.
- The convergence of IT and OT networks.
- Key components of an IIoT system.
- Challenges of industrial networking.
- The importance of uptime and reliability.
- IIoT applications in manufacturing and energy.
- Case study: a connected factory floor.

Unit Two: IIoT Network Architecture

- Network topologies for industrial environments.
- Wired connectivity protocols (e.g., Ethernet/IP, PROFINET).
- Wireless connectivity protocols (e.g., Wi-Fi, LoRaWAN, Cellular).
- Low-power wide-area networks (LPWANs).
- Designing a network for scalability.
- Data flows from device to the cloud.
- Practical lab: selecting connectivity for a specific use case.

Unit Three: IIoT Network Security

- Introduction to industrial cybersecurity.
- Threats to IIoT networks.
- Securing devices, data, and communication links.
- Network segmentation for IT/OT environments.
- Access control and authentication.
- Implementing firewalls and intrusion detection systems.
- Case study: a security breach in a smart grid.

Unit Four: Data and Device Management

- Managing a high volume of connected devices.
- Data protocols for IIoT (e.g., MQTT, CoAP).
- Edge computing for data processing.
- The role of cloud platforms in IIoT.
- Data analytics and visualization.
- Remote monitoring and control.
- Troubleshooting data flow issues.

Unit Five: Implementation and Future Trends

- Planning and deploying an IIoT network.
- Best practices for system integration.
- Maintenance and lifecycle management.
- Future trends in industrial networking.
- The role of 5G in IIoT.
- Final project: designing an IIoT network for a new facility.
- Exploring emerging technologies.
- Frequently Asked Questions:

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As industrial systems become more interconnected, what are the ethical implications for data ownership, privacy, and the potential for a workforce that relies on automated, sensor-driven systems?

What unique qualities does this course offer compared to other courses?

This course provides a unique and specialized focus on the intersection of networking and the industrial sector, a field often overlooked by general IT training. It addresses the specific challenges of operational technology (OT) environments, where uptime and safety are paramount. Unlike generic IoT courses, this program focuses on the practical application of networking principles to industrial systems, including the use of specialized protocols and the critical need for robust cybersecurity. The hands-on, case-study-driven approach ensures that participants gain not only technical knowledge but also the strategic mindset to implement resilience and secure IIoT networks. This program is for professionals who want to lead the digital transformation of their industries, providing them with the specialized skills to bridge the gap between IT and OT.